**APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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| Appellant(s): | Rida M. Hamza et al. | Examiner: Jessica Roberts |
| Serial No.: | 10/684,865 | Group Art Unit: 2621 |
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| Title: | MULTI-STAGE MOVING OBJECT SEGMENTATION | |

**APPEAL BRIEF UNDER 37 CFR § 41.37**

Mail Stop Appeal Brief- Patents
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This Appeal Brief is presented in support of the Notice of Appeal to the Board of Patent Appeals and Interferences, filed herewith, from the Final Rejection of claims 1-30 of the above-identified application, as set forth in the Final Office Action mailed on October 27, 2009.

The Commissioner of Patents and Trademarks is hereby authorized to charge Deposit Account No. 19-0743 in the amount of $540.00 which represents the requisite fee set forth in 37 C.F.R. § 41.20(b)(2). The Appellants respectfully request consideration and reversal of the Examiner's rejections of the pending claims.

## 1. REAL PARTY IN INTEREST

The real party in interest of the above-captioned patent application is the assignee, Honeywell International Inc.

## 2. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants that will have a bearing on the Board's decision in the present appeal.

## 3. STATUS OF THE CLAIMS

The present application was filed on October 14, 2003 with claims 1-27. A Non-Final Office Action mailed on April 18, 2007 rejected claims 1-27. The Appellants filed a response to the Office Action on July 27, 2007. A Final Office Action mailed October 2, 2007 maintained the rejection of claims 1-27. The Appellants filed a Request for Continued Examination on January 2, 2008. A Non-Final Office Action mailed February 1, 2008 maintained the rejection of claims 1-27. The Appellants responded to the Non-Final Office Action on April 30, 2008. A Final Office Action mailed July 16, 2008 maintained the rejection of claims 1-27. The Appellants filed a Request for Continued Examination on August 12, 2008, and added claims 28-30. A Non-Final Office Action mailed September 5, 2008 maintained the rejection of claims 1-27, and rejected claims 28-30. The Appellants responded to the Non-Final Office Action on December 4, 2008. A Non-Final Office Action mailed March 19, 2009 maintained the rejection of claims 1-30. The Appellants filed a response to the Non-Final Action on June 19, 2009. A Final Office Action mailed October 27, 2009 maintained the rejection of claims 1-30.

Claims 1-30 stand twice rejected, remain pending, and are the subject of the present Appeal.

## 4. STATUS OF AMENDMENTS

No amendments have been made subsequent to the Final Office Action mailed October 27, 2009.

## 5. SUMMARY OF CLAIMED SUBJECT MATTER

Aspects of the present inventive subject matter include, but are not limited to, multi-stage moving object segmentation.

### Independent Claim 1

In an embodiment, as recited in independent claim 1, a method of detecting motion in an area comprises receiving at one or more processors (¶ [0047], p. 14, lines 3-7; FIG. 6, No. 602, 610) frames of the area (¶ [0010], p. 3, lines 13-14). The method uses a high speed motion detection algorithm executing in the one or more processors to remove frames in which a threshold amount of motion is not detected (¶ [0010], p. 3, lines 14-15; FIG. 1, No. 180). The high speed motion detection algorithm represents frames, wherein a plurality of the frames comprises a selected portion of a frame with a first pixel color distribution associated with a first block of pixels that does not represent any motion of interest (¶ [0045], p. 13, lines 17-19). The high speed motion detection algorithm is configured such that the first color pixel distribution is pre-selected, prior to the receiving the frames of the area, as a function of the block of pixels that does not represent any motion of interest (¶ [0045], p. 13, lines 19-21). A high performance motion detection algorithm executing in the one or more processors (¶ [0047], p. 14, lines 3-7; FIG. 6, No. 602, 610) on remaining frames detects true motion from noise (¶ [0010], p. 3, lines 16-17; ¶ [0023], p. 7, lines 2-4; FIG. 1, No. 130). The high performance motion detection algorithm operates on the frames, wherein the plurality of the frames comprises a selected portion of a frame with the first pixel color distribution associated with the first block of pixels (¶ [0045], p. 13, lines 17-19) and another portion of the frame with a second pixel color distribution associated with a second block of pixels (¶ [0045], p. 13, lines 22-24).

### Independent Claim 16

In another embodiment, as recited in independent claim 16, a method of detecting motion in an area comprises receiving at one or more processors (¶ [0047], p. 14, lines 3-7; FIG. 6, No. 602, 610) frames of the area (¶ [0010], p. 3, lines 13-14). A high speed motion detection algorithm executes in the one or more processors (¶ [0047], p. 14, lines 3-7; FIG. 6, No. 602,

610) to remove frames in which a threshold amount of motion is not detected (¶ [0010], p. 3, lines 14-15; FIG. 1, No. 180). The high speed motion detection algorithm represents the frames, wherein a plurality of the frames comprises a selected portion of a frame with a first pixel color distribution associated with a first block of pixels that does not represent any motion of interest (¶ [0045], p. 13, lines 17-19). The high speed motion detection algorithm is configured such that the first color pixel distribution is pre-selected, prior to the receiving frames of the area, as a function of the block of pixels that does not represent any motion of interest (¶ [0045], p. 13, lines 19-21). A high performance motion detection algorithm executing in the one or more processors (¶ [0047], p. 14, lines 3-7; FIG. 6, No. 602, 610) on remaining frames detects true motion from noise (¶ [0010], p. 3, lines 16-17; ¶ [0023], p. 7, lines 2-4; FIG. 1, No. 130). The frames comprise pixels, wherein such pixels are grouped in blocks of pixels, each block being represented as a single average pixel (¶ [0046], p. 13, lines 25-26). The high performance motion detection algorithm operates on the frames, wherein the plurality of the frames comprises a selected portion of a frame with the first pixel color distribution associated with the first block of pixels (¶ [0045], p. 13, lines 17-19) and another portion of the frame with a second pixel color distribution associated with a second block of pixels (¶ [0045], p. 13, lines 22-24). Using the one or more processors (¶ [0047], p. 14, lines 3-7; FIG. 6, No. 602, 610), a model of the area is initialized, and the model comprises multiple weighted distributions for each block of pixels (¶ [0011], p. 3, lines 20-21).

## Independent Claim 27

In another embodiment, as recited in independent claim 27, a system is configured for detecting motion in a monitored area. The system includes means for receiving video images of the monitored area (¶ [0023], p. 7, lines 1-2). A fast video motion segmentation (VMS) module rejects still images that do not portray any motion (¶ [0012], p. 3, lines 24-26). The fast VMS module represents frames, wherein a plurality of the frames comprises a selected portion of a frame with a first pixel color distribution associated with a first block of pixels that does not represent any motion of interest (¶ [0045], p. 13, lines 17-19). The high speed motion detection algorithm is configured such that the first color pixel distribution is pre-selected, prior to the receiving video images of the monitored area, as a function of the block of pixels that does not

represent any motion of interest (¶ [0045], p. 13, lines 19-21). A robust VMS module detects motion of an object in the monitored area (¶ [0012], p. 3, lines 26-27). A resource management controller initializes, controls, and adapts the fast and robust VMS modules (¶ [0012], p. 3, lines 28-29). The robust VMS module operates on the frames, wherein the plurality of the frames comprises a selected portion of a frame with the first pixel color distribution associated with the first block of pixels (¶ [0045], p. 13, lines 17-19) and another portion of the frame with a second pixel color distribution associated with a second block of pixels (¶ [0045], p. 13, lines 22-24).

This summary does not provide an exhaustive or exclusive view of the present subject matter, and Appellants refer to each of the appended claims and its legal equivalents for a complete statement of the invention.

## 6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-30 are rejected under 35 U.S.C. § 112, first paragraph as allegedly failing to comply with the written description requirement.

Claims 1-30 are rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter.

Claims 1-26 and 28-30 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Pavlidis (Urban Surveillance Systems), in view of Monroe (US 2003/0025599), in view of Flickner (US 2003 0107649), and further in view of Gu (US Pat. No. 5,874,988).

Claim 27 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Monroe (US 2003/0025599), in view of Pavlidis (Urban Surveillance Systems), ), in view of Flickner (US 2003 0107649), and further in view of Gu (US Pat. No. 5,874,988).

## 7. ARGUMENT

### Applicable Law Under 35 U.S.C. §§ 101, 103(a), and 112

The patent statute at 35 U.S.C. § 101 provides that patentable subject matter includes a new and useful process, machine, manufacture, or composition. A process, to be patentable subject matter, must be tied to a particular machine or transform an article into a different state or thing.[1]

A patent may not be obtained for an invention, even though the invention is not identically disclosed or described in a single patent or other publication, if the differences between the subject matter of the invention and the prior art are such that the subject matter as a whole would have been obvious at the time that the invention was made to a person having ordinary skill in the art to which the subject matter of the invention pertains.[2] An obviousness analysis under § 103 is objective. That is, the scope and content of the prior art are determined, the differences between the prior art and the claims at issue are ascertained, and the level of ordinary skill in the pertinent art is resolved. It is against this background that the obviousness or nonobviousness of the subject matter is determined. Other considerations such as commercial success, long felt but unsolved need, and the failure of others might be utilized to shed light on the circumstances surrounding the origin of the subject matter sought to be patented.[3] While the obviousness analysis need not seek out precise teachings directed to the specific subject matter of a claim, the analysis should nevertheless be explicit, including some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness, and not based on mere conclusory statements.[4] An indication of a teaching, suggestion, or motivation in the prior art may be part of this analysis, since there is no necessary inconsistency between the idea underlying the teaching, suggestion, and motivation test and the *Graham* analysis. However, the general principle of the teaching, suggestion, and motivation test should not be transformed into a rigid rule that limits the obviousness inquiry.[5] Rather, the approach to the determination of

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[1] *In re Bilski,* 545 F.3d 943, 954 (Fed. Cir. 2008).
[2] 35 U.S.C. § 103(a).
[3] *KSR International Co. v. Teleflex Inc.,* 550 U.S. ____ , p. 2 slip opinion (2007), *citing Graham v. John Deere Co. of Kansas City,* 383 U.S. 1, 15-17 (1966).
[4] *Id.,* p.14, *citing In re Kahn,* 441 F.3d 977, 988 (Fed. Cir. 2006).
[5] *Id.,* p. 15.

obviousness or nonobviousness should remain expansive and flexible.[6] And further while there is a need for caution in granting a patent based on a combination of elements found in the prior art,[7] a patent composed of several elements is not proved obvious merely by showing that each of its elements was, independently, known in the prior art. Therefore, it can be important to identify a reason that would have prompted a person of ordinary skill in the art in the relevant field to combine the elements in the way the claimed new invention does.[8]

The patent statue requires at 35 U.S.C. § 112, 1st ¶ that the specification contain a written description of the invention, and the manner and process of using it. The written description must be in full, clear, concise, and exact terms to enable any person skilled in the art to make and use the claimed invention. However, claim limitations need not have *ipissimis verbis* support in the written description in order for the written description to provide adequate support for the claim limitation.[9]

## **Rejection Of Claims 1-30 Under 35 U.S.C. § 112, First Paragraph**

Claims 1-30 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly lacking adequate description or enablement. The Appellants respectfully seek the reversal of this rejection.

The Final Office Action contends that there is no support for the claim language that a high speed motion detection algorithm is configured such that a first color pixel distribution is pre-selected "prior to receiving the frames of the area, as a function of the block of pixels that does not represent any motion of interest." The Appellants respectfully disagree.

Paragraph [0045] of the Appellants' specification discloses:

> The speed motion detection algorithm presents portions of images in grey scale pixels when such portions . . . are not expected to have motion. These areas may be selected on initialization based on knowledge of the operator, or may be selected based on a real time assessment of the scene.

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[6] *Id.*, p. 11.
[7] *Id.*, p.11.
[8] *Id.*, pp. 14-15.
[9] *See e.g.*, MPEP § 2173.05(i).

The Appellants respectfully submit that the language "These areas (*i.e.*, the areas represented by the grey scale pixels that are not expected to have any motion) may be selected on initialization" provides support for the claim language "prior to receiving the frames of the area," since one of skill in the art would know that initialization of a motion detection system occurs before any video frames are received and processed by the system. The Appellants further respectfully submit that the language "The speed motion detection algorithm presents portions of images in grey scale pixels when such portions . . . are not expected to have motion" provides support for the claim language "as a function of the block of pixels that does not represent any motion of interest." The Appellants further respectfully submit that a claim limitation need not be recited *ipissimis verbis* in the written description in order for the written description to provide adequate support for the claim limitation.[10] The Appellants respectfully request the reversal of the rejection of claims 1-30 under 35 U.S.C. § 112, first paragraph.

Additionally, ¶ [0048] of the specification discloses that the subject matter of the disclosure can be used in connection with large open spaces such as parking lots, airport terminals, and plazas. One of skill in the art would realize that such large open spaces would have portions that do not have motion of interest.

## **Rejection Of Claims 1-30 Under 35 U.S.C. § 101**

The Final Office Action on page 12 contends that claim 1, taken as a whole, recites a mathematical algorithm, *i.e.* an abstract idea. The Appellants respectfully disagree, and respectfully seek the reversal of this rejection.

The Appellants respectfully submit that the claim as a whole recites "using a high speed motion detection algorithm executing in the one or more processors to remove frames in which a threshold amount of motion is not detected . . . and using a high performance motion detection algorithm executing in the one or more processors on remaining frames to detect true motion from noise." The Appellants respectfully submit that there is nothing abstract about "remov[ing] frames in which a threshold amount of motion is not detected" and processing the "remaining frames to detect true motion from noise." For at least this reason, the Appellants respectfully

[10] *See e.g.*, MPEP § 2173.05(i).

submit that the rejection of claim 1 under 35 U.S.C. § 101 is in error, and the Appellants respectfully seek the reversal of this rejection.

Moreover, claim 1 recites that both the high speed motion detection algorithm and the high performance motion detection algorithm "execute[e] in one or more processors." The Appellants respectfully submit that this ties the process of claim 1 to a specifically programmed machine, respectfully submit that this renders statutory the subject matter of claim 1, respectfully submit that the rejection of claim 1 is in error, and respectfully seek the reversal of the rejection of claim 1 and the claims that are dependent on claim 1.

Independent claim 16 recites a process that includes substantially the same features as claim 1, and that are also tied to a machine by the recitation of one or more processors. The Appellants therefore respectfully submit that for the same reasons as recited above in connection with claim 1, the rejection of claim 16 is also in error, and the Appellants respectfully request the withdrawal of the rejection of claim 16 and the claims dependent on claim 16.

The Final Office Action rejects claim 27 under 35 U.S.C. § 101 as directed to non-statutory matter, that is, a carrier wave, and cites ¶ [0021] of the Appellants' specification. The Appellants respectfully seek the reversal of this rejection.

The Appellants respectfully submit that claim 27 does not recite a carrier wave. Paragraph [0021] states that the "term 'computer readable media' is also used to represent carrier waves." However, claim 27 recites a system, not a computer readable medium. The Appellants therefore respectfully submit that claim 27 does not encompass carrier waves, and the Appellants respectfully seek the reversal of the rejection of claim 27.

## Rejection Of Claims 1-30 Under 35 U.S.C. § 103(a)

Claims 1-26 and 28-30 were rejected under 35 U.S.C. § 103(a) as being obvious over Pavlidis et al., Urban Surveillance Systems 2001 in view of Monroe et al., US-2003/0025599 in view of Flickner et al., US-2003/0122942 A1 and further in view of Gu et al., U.S. 5,874,988 in view of Parker et al. US-2003-0122942A1.

Claim 27 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Monroe (US 2003/0025599), in view of Pavlidis (Urban Surveillance Systems), ), in view of Flickner (US 2003 0107649), and further in view of Gu (US Pat. No. 5,874,988).

The Appellants respectfully traverse and respectfully seek the reversal of these rejections. The claimed subject matter recites "the first color pixel distribution is pre-selected, prior to the receiving the frames of the area, as a function of the block of pixels that does not represent any motion of interest." As noted in the specification,[11] this pre-selection can occur at initialization based on the knowledge of an operator. Consequently, an operator can for example determine beforehand that video segments relating to the sky are of no interest, and the blue color of the sky can then be treated as having no motion of interest.

The Final Office Action admits that this feature is not disclosed in either Pavlidis, Monroe, or Flickner. However, the Final Office Action contends that Gu teaches "the pixel distributions are preselected," and that it would have been obvious to one of skill to incorporate the teachings of Gu with Pavlidis (as modified by Monroe and Flickner). The Final Office Action further admits that neither Pavlidis, nor Monroe, nor Flickner, nor Gu discloses that the "color pixel distribution is pre-selected." However, the Final Office Action contends that Parker discloses this feature, and that it would have been obvious to one of skill in the art to incorporate the teachings of Parker with Pavlidis (as modified by Monroe, Flickner, and Gu). The Appellants respectfully disagree that it would have been obvious to one of skill in the art to incorporate the teachings of Gu with Pavlidis (as modified by Monroe and Flickner), and further respectfully disagree that it would have been obvious to one of skill in the art to incorporate the teachings of Parker with Pavlidis (as modified by Monrone, Flickner, and Gu).

The Gu reference relates to color correction systems, not motion detecting systems. Indeed, a computer search of Gu for the term "motion" resulted in zero (0) hits. Moreover, the section of Gu cited by the Final Office Action relates to "Predetermined color parameter statistical data, *e.g.* the lower edge, upper edge, and peak values of color distribution histograms." The Appellants respectfully submit that predetermining statistics regarding histograms is not a disclosure of a "pixel distribution [that] is preselected" in a motion detection system as is recited in the claims. So not only does Gu not disclose the feature as contended by the Final Office Action, but it would not have been obvious to incorporate Gu into Pavlidis because there is no reason to incorporate a predetermination of color parameter histogram data into a video surveillance system. Moreover, the rationale provided in the Final Office Action,

[11] Appellants' Specification, ¶ [0045].

that it would provide for efficient color processing of color images, has no application to Pavlidis, since Pavlidis is not a color correction system. Consequently, the Appellants respectfully submit that a *prima facie* case of obviousness has not been established, and respectfully request the reversal of the rejection of the claims.

The Final Office Action admits that Pavlidis (as modified by Monroe, Flickner, and Gu) is silent in regards to the feature that the color pixel distribution is pre-selected. The Final Office Action contends however that Parker discloses this feature, and that it would have been obvious to one of skill in the art to incorporate the teachings of Parker into Pavlidis in order to provide improved image processing. The Appellants respectfully disagree.

The cited portion of Parker (¶ [0045]) relates to a skin detection algorithm, and in particular, the manner in which a pre-determined skin distribution color image segmentation can be used to determine if an image falls within that distribution---that is, if the image includes human skin. The Appellants respectfully submit that it would not have been obvious to combine Parker with Pavlidis since one of skill in the art would not have a reason to apply a skin color detection algorithm to a system for motion detection. Moreover, the rationale provided by the Office Action, that is that the combination of Parker with Pavlidis would provide improved image processing, is simply too general a rational to establish a prima *facie case* of obviousness.[12]

In summary, the Appellants respectfully submit that the Examiner is using the teachings of the Appellants' disclosure against the Appellants, that such use is improper, and that a *prima facie* case of obviousness cannot be established based on the Appellants' disclosure.

In the Office Action of March 19, 2009, the Examiner contended that the Appellants attack the references individually, and that one cannot show non-obviousness by attacking references individually.

The Appellants have reviewed the cases cited by the March 19$^{th}$ Office Action in support of this contention, and the Appellants respectfully disagree with this dicta in these cases because it is not in line with either *Graham* or *KSR*. It is not in line with *Graham* because *Graham*

[12] *See In re Lee,* 277 F.3d 1338, 1342-44 (Fed. Cir. 2002) (There must be objective evidence and specific factual findings with respect to the motivation to combine references). *See also Ecolochem v. Southern California Edison Co.,* 277 F.3d 1361, 1372 (Fed. Cir. 2002) (broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence of obviousness).

requires an analysis of the scope and contents of the prior art. It is further not in line with *KSR*, since *KSR* states that the obviousness inquiry should be flexible, and preventing an applicant from analyzing the prior art to address the rationale set forth in an office action is not a flexible inquiry.

Moreover, in analyzing the references, the Appellants are merely replying to the interpretation of the references put forth by the Patent Office. The Appellants respectfully submit that they should be permitted to respond to the Patent Office's interpretations.

## SUMMARY

For the reasons argued above, claims 1-30 were not properly rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement, claims 1-30 were not properly rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter, claims 1-26 and 28-30 were not properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Pavlidis (Urban Surveillance Systems), in view of Monroe (US 2003/0025599), in view of Flickner (US 2003 0107649), and further in view of Gu (US Pat. No. 5,874,988), and claim 27 was not properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Monroe (US 2003/0025599), in view of Pavlidis (Urban Surveillance Systems), ), in view of Flickner (US 2003 0107649), and further in view of Gu (US Pat. No. 5,874,988).

It is respectfully submitted that the art cited does not render the claims obvious and that the claims are patentable over the cited art. Reversal of the rejection and allowance of the pending claims are respectfully requested.

Respectfully submitted,

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**CERTIFICATE UNDER 37 CFR 1.8:** The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop Appeal Brief – Patents, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 23rd day of December, 2009.

DAWN M. POOLE / Dawn M. Poole /

Name Signature

## 8. CLAIMS APPENDIX

1. A method of detecting motion in an area, the method comprising:

receiving at one or more processors frames of the area;

using a high speed motion detection algorithm executing in the one or more processors to remove frames in which a threshold amount of motion is not detected, wherein the high speed motion detection algorithm represents frames, wherein a plurality of the frames comprises a selected portion of a frame with a first pixel color distribution associated with a first block of pixels that does not represent any motion of interest, and wherein the high speed motion detection algorithm is configured such that the first color pixel distribution is pre-selected, prior to the receiving the frames of the area, as a function of the block of pixels that does not represent any motion of interest; and

using a high performance motion detection algorithm executing in the one or more processors on remaining frames to detect true motion from noise,

wherein the high performance motion detection algorithm operates on the frames, wherein the plurality of the frames comprises a selected portion of a frame with the first pixel color distribution associated with the first block of pixels and another portion of the frame with a second pixel color distribution associated with a second block of pixels.

2. The method of claim 1 wherein the high speed detection algorithm operates in a compressed image domain.

3. The method of claim 1 wherein the high speed detection algorithm operates in an uncompressed image domain.

4. The method of claim 1 wherein the high performance detection algorithm operates in an image pixel domain.

5. The method of claim 4 wherein the high speed motion detection algorithm represents portions of images in grey scale pixels.

6. The method of claim 5 wherein portions of the image are represented in grey scale when such portions are not high in color content.

7. The method of claim 1 wherein the selected portions of the images are low in color content.

8. The method of claim 7 wherein the portions are based on an initial set up.

9. The method of claim 1 wherein the selected portions are determined based on a real time assessment of dynamic change in the area.

10. The method of claim 1 wherein the threshold is predetermined.

11. The method of claim 1 wherein the area is a predetermined area.

12. The method of claim 1 wherein the frames comprise pixels, and where such pixels are grouped in blocks of pixels, each block being represented as an average or median in the color domain.

13. The method of claim 12 wherein the blocks of pixels are of different sizes.

14. The method of claim 13 wherein portions of the area requiring higher resolution to detect motion are represented by blocks of smaller number of pixels.

15. The method of claim 13 wherein the number of pixels in the blocks is varied based on depth of field.

16. A method of detecting motion in an area, the method comprising:

receiving at one or more processors frames of the area;

using a high speed motion detection algorithm executing in the one or more processors to remove frames in which a threshold amount of motion is not detected, wherein the high speed motion detection algorithm represents the frames, wherein a plurality of the frames comprises a selected portion of a frame with a first pixel color distribution associated with a first block of pixels that does not represent any motion of interest, and wherein the high speed motion detection algorithm is configured such that the first color pixel distribution is pre-selected, prior to the receiving frames of the area, as a function of the block of pixels that does not represent any motion of interest;

using a high performance motion detection algorithm executing in the one or more processors on remaining frames to detect true motion from noise, wherein the frames comprise pixels, wherein such pixels are grouped in blocks of pixels, each block being represented as a single average pixel, and wherein the high performance motion detection algorithm operates on the frames, wherein the plurality of the frames comprises a selected portion of a frame with the first pixel color distribution associated with the first block of pixels and another portion of the frame with a second pixel color distribution associated with a second block of pixels; and

initializing, using the one or more processors, a model of the area comprising multiple weighted distributions for each block of pixels.

17. The method of claim 16 wherein the frames comprise blocks of pixels, and wherein a number of weighted distributions per block is varied.

18. The method of claim 17 wherein the number of weighted distributions varies between 1 and 5.

19. The method of claim 17 wherein the number of weighted distributions is varied based on dynamics of motions or expectations.

20. The method of claim 16 wherein the model is based on N successive frames and the weight is based on a count.

21. The method of claim 16 wherein a predefined number of weighted distributions is selected for each block of pixels, and wherein the weights are normalized.

22. The method of claim 16 wherein if pixels in a new frame match the model, the model weights and distributions are updated.

23. The method of claim 16 wherein a (modified Jeffery's measure) is used to determine a match or non-match in the distributions.

24. The method of claim 16 wherein if a predetermined number of frames have pixels or blocks that do not match the model, the lowest weighted distributions of the pixels or blocks of a background are removed from the model and replaced by ones derived from a foreground distribution once a derived number of sequences is reached within the last N successive frames.

25. The method of claim 16 wherein the high speed motion detection algorithm operates in a compressed image domain.

26. The method of claim 16 wherein the high speed motion detection algorithm operates in an uncompressed image domain.

27. A system for detecting motion in a monitored area, the system comprising:

means for receiving video images of the monitored area;

a fast video motion segmentation (VMS) module that rejects still images that do not portray any motion, wherein the fast VMS module represents frames, wherein a plurality of the frames comprises a selected portion of a frame with a first pixel color distribution associated with a first block of pixels that does not represent any motion of interest, and wherein the high

speed motion detection algorithm is configured such that the first color pixel distribution is pre-selected, prior to the receiving video images of the monitored area, as a function of the block of pixels that does not represent any motion of interest, and;

a robust VMS module that detects motion of an object in the monitored area; and

a resource management controller that initializes, controls, and adapts the fast and robust VMS modules;

wherein the robust VMS module operates on the frames, wherein the plurality of the frames comprises a selected portion of a frame with the first pixel color distribution associated with the first block of pixels and another portion of the frame with a second pixel color distribution associated with a second block of pixels.

28. The method of claim 1, wherein the first color pixel distribution is pre-selected by an operator.

29. The method of claim 1, wherein the first color pixel distribution is pre-selected by an automated image contextual classifier.

30. The method of claim 1, comprising analyzing the frame as a function of a resolution of a region of interest in the frame.

## 9. EVIDENCE APPENDIX

None.

## 10. RELATED PROCEEDINGS APPENDIX

None.